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09/297,606	06/18/99	LARSSON	B 705/1862-2/8

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EXAMINER	
PEREZ,G	
ART UNIT	**PAPER NUMBER**
2834	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/297,606	LARSSON ET AL.	
	Examiner	Art Unit	
	Guillermo Perez	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20,22-56 and 58-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20,22-56 and 58-62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a)☒ All b)☐ Some * c)☐ None of the CERTIFIED copies of the priority documents have been:

1.☒ received.

2.☐ received in Application No. (Series Code / Serial Number) _____ .

3.☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *10* .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 to 20, 22 to 33 and 58 to 60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "said rotor" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 recites the limitation "said first layer" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 recites the limitation "said second layer" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "said second layer" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "said three layers" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "the adjacent layer" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites the limitation "said layers" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 12 recites the limitation "the aligned circular openings" in lines 2 to 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 25 recites the limitation "said tightening means" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 58 recites the limitation "the recesses" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 58 recites the limitation "the axial opening" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 60 recites the limitation "forming the radially adjacent recesses" in lines 1 to 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 60 recites the limitation "the cable" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

1. Claims 34 to 35, 37, 40 to 41 and 56 are rejected under 35 U.S.C. 102(e) as being anticipated by Takeuchi et al. (U.S. Pat. No. 5,583,387).

Referring to claim 34, Takeuchi et al. disclose a method for manufacturing a stator for a high voltage rotating electric machine having a stator, with a stator core, a

winding and a rotor, wherein said stator core has stator teeth extending radially inwards, towards said rotor comprising the steps of: axially joining a number of tooth sections into a stator tooth plank for forming said stator tooth fitting, side by side, a number of stator tooth planks, for forming at east one section of the stator core, and providing a winding within which a generated electric field confining the electric field in the winding for at least one turn of said winding (column 3, lines 10 to 35).

Referring to claim 35, Takeuchi et al. disclose that joining together a number of sections of the stator core to form a complete stator core (column 3, lines 46 to 52).

Referring to claim 37, Takeuchi et al. disclose the steps of removably locating an initial fixture element, including at least one of a stator tooth plank and a fixture tooth in a manufacturing fixture; removably inserting at least one temporary stator tooth in the fixture; inserting a stator winding on the temporary stator tooth situated closest to the fixture element; removing the temporary stator tooth situated closest to the fixture element from the manufacturing fixture, and allowing the stator winding placed on the temporary stator tooth to fall or be pressed down into a correct position in a first winding slot in the fixture element; inserting a stator tooth into the manufacturing fixture and fitting the stator tooth over the stator winding; repeating the previous steps until at least a section of a complete stator core has been produced (column 3, lines 46 to 52).

Referring to claim 40, Takeuchi et al. disclose the rotation of the fixture about a horizontal axis corresponding to an axis of symmetry of the stator (column 3, lines 46 to 52).

Referring to claim 41, Takeuchi et al. disclose joining the stator windings to define an intended number of poles and phases (column 3, lines 26 to 29).

Referring to claim 56, Takeuchi et al. disclose a stator for a rotating electric machine, manufactured in accordance with the method in claim 34 (column 3, lines 10 to 35).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 to 2, 13 to 14, 17 to 20, 22 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. (U.S. Pat. No. 5,382,859) in view of Nikitin et al. (U. S. Pat. No. 4, 429, 244) and further in view of Elton et al. (U. S. Pat. No. 5, 036, 165).

Huang et al. disclose a stator for a rotating electric machine, comprising a stator core and a winding (figure 10), said stator core including stator teeth extending radially inwards (figure 2), towards said rotor configured as a number of tooth sections jointed axially forming a stator tooth plank (figure 3), a number of said stator tooth planks being fit together side by side forming a section of a stator core (figure 3) up to a complete stator core (figure 5), such that when an electric field is generated said field is enclosed within the winding for at least one turn thereof; and that

a number of said sections are joined together in order to form a complete stator core (figures 3 and 5) and that

the stator winding (figure 10) is insertable between each stator tooth plank before said planks are fit together (abstract) and that

the stator tooth comprises a forward tooth portion (32a) facing inwards, towards the rotor (figure 2), when mounted in the stator (figure 1), and a yoke portion (36) facing outwards, each stator tooth opposite lateral sides each confronting a corresponding side of an adjacent stator tooth (figure 1), said confronting lateral sides together forming a slot (26) for receiving the winding and a lining (column 8, lines 19 to 24) disposed on at least one of the lateral sides, the lining being formed of a resilient material and

compressing means (figure 5) for tangentially compressing the teeth for providing a pre-stressing at the innermost end of the teeth and that

the compressing means (56) includes a stator frame (50) and

an annular stator frame (50) surrounding the core for securing the stator core sections of the complete stator core in place and that

the tooth has an outer yoke portion, and further including a stator frame, and a lining of a resilient material located on the external side of the yoke portion of said tooth, in contact with the stator frame (column 8, lines 27 to 34) and that

the stator frame has at least one longitudinal axial opening (figure 5) and said stator frame includes at least one tightening means (56) for tightening said frame around the stator core by reducing said opening and that

each tooth section includes guiding means on both lateral sides (figures 7 and 8); said guiding means for engaging in mating relation with corresponding guiding means on the adjacent stator tooth. However, Huang et al. do not disclose that the stator is for a high voltage electric machine; nor that the winding comprises a cable including a circuit-carrying conductor and a magnetically permeable, electric field confining insulating covering surrounding the conductor.

Nikitin et al. disclose a high voltage stator with windings comprising a high voltage cable including a circuit-carrying conductor , for the purpose of raising the voltage across the stator winding.

Elton et al. disclose a cable including a circuit-carrying conductor and a magnetically permeable, electric field confining insulating covering surrounding the conductor, for the purpose of avoiding the development of a corona discharge when an electrical potential exists between the conductor and the region adjacent the exterior surface of the insulator.

It would have been obvious at the time the invention was made to modify the stator for a rotating electric machine of Huang et al. and provide it with a high voltage stator with windings comprising a high voltage cable including a circuit-carrying conductor as disclosed by Nikitin et al.; and a cable including a circuit-carrying conductor and a magnetically permeable, electric field confining insulating covering surrounding the conductor as disclosed by Elton et al., for the purpose of raising the voltage across the stator winding and avoiding the development of a corona discharge

when an electrical potential exists between the conductor and the region adjacent the exterior surface of the insulator.

3. Claims 3 to 8, 12 and 58 to 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. in view of Nikitin et al. and further in view of Elton et al. as applied to claims 1 and 34 above, and further in view of G. F. Redfern (GB468, 827).

Huang et al., Nikitin et al. and Elton et al. disclose a stator as described on item 2 above and also Elton et al. disclose that said winding comprises at least one current-carrying conductor (102),

a first layer having semi-conducting properties surrounding said conductor (104),

a solid insulating layer surrounding said first layer (106), and

a second layer having semi-conducting properties surrounding said insulating layer (110); and that

the stator winding comprises a flexible cable; and that

at least one of said first layer and said second layer forms an equipotential surface surrounding said conductor (column 2, lines 27 to 32); and that

said second layer is connectable to a predetermined potential (column 2, lines 41 to 43); and that

said predetermined potential is ground potential (figure 1); that

each of said three layers is solidly connected to the adjacent layer along substantially the whole of a connecting surface therebetween. However, neither Huang et al., Nikitin et al. nor Elton et al. disclose that the stator teeth have radially positioned

semicircular recesses and the teeth are disposed with the recesses in confronting relationship forming circular axial openings for threadably receiving the cable therein; nor that the cable is threadably insertable into the aligned circular openings between each stator tooth plank before said planks are fit together; nor that the recesses comprise semicircular surfaces formed in the teeth, and the axial openings are in the form of circular holes for threadably receiving the cable therein; nor that the second layer is outermost of the cable for contacting the stator core; nor the step of forming the radially adjacent recesses comprising forming semicircular recesses and fitting the two planks together forms radially adjacent circular openings for threadably receiving the cable therein.

G. F. Redfern disclose that the stator teeth have radially positioned semicircular recesses and the teeth are disposed with the recesses in confronting relationship forming circular axial openings for threadably receiving the cable therein, for the purpose of giving the machine a suitable leakage value.

It would have been obvious at the time the invention was made to modify the stator of Huang et al., Nikitin et al. and Elton et al. and provide it with stator teeth having radially positioned semicircular recesses, the teeth being disposed with the recesses in confronting relationship forming circular axial openings for threadably receiving the cable therein; as disclosed by G. F. Redfern, for the purpose of giving the machine a suitable leakage value.

4. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. in view of Nikitin et al. and further in view of Elton et al. as applied to

claim 1 above, and further in view of C. F. Hofmann (U. S. Pat. No. 3, 434, 087).

Huang et al., Nikitin et al. and Elton et al. disclose a stator as described on item 2 above. However, neither Huang et al., Nikitin et al. nor Elton et al. disclose that at least two adjacent layers have substantially equal thermal expansion coefficients.

C. F. Hofmann discloses disclose that at least two adjacent layers have substantially equal thermal expansion coefficients, for the purpose of avoiding the formation of cracks in the insulation as well as the separation of the metal from the applied resinous composition.

It would have been obvious at the time the invention was made to modify the stator of Huang et al., Nikitin et al. and Elton et al. and provide it with at least two adjacent layers have substantially equal thermal expansion coefficients as disclosed by C. F. Hofmann, for the purpose of avoiding the formation of cracks in the insulation as well as the separation of the metal from the applied resinous composition.

5. Claims 10 to 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. in view of Nikitin et al. and further in view of Elton et al. as applied to claim 1 above, and further in view of Breitenbach et al. (U.S. Pat. No. 4,785,138).

Huang et al., Nikitin et al. and Elton et al. disclose a stator as described on item 2 above. However, neither Huang et al., Nikitin et al. nor Elton et al. disclose that at least two adjacent layers have substantially equal thermal expansion coefficients; nor that

each of said three layers is solidly connected to the adjacent layer along substantially the whole of a connecting surface therebetween.

Breitenbach et al. disclose that at least two adjacent layers have substantially equal thermal expansion coefficients (column 4, lines 39 to 42); and that each of said three layers is solidly connected to the adjacent layer along substantially the whole of a connecting surface therebetween (column 4, lines 24 to 28) for the purpose of minimizing thermal aging and avoiding detaching of the layer from the conductor due to bending or axial stress.

It would have been obvious at the time the invention was made to modify the stator of Huang et al., Nikitin et al. and Elton et al. and provide it with at least two adjacent layers have substantially equal thermal expansion coefficients; and with each of said three layers solidly connected to the adjacent layer along substantially the whole of a connecting surface therebetween as disclosed by Breitenbach et al. for the purpose of avoiding the layers from being separated from the conductor and thermal aging thus improving reliability on the cable.

6. Claims 15 to 16 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. in view of Nikitin et al. and further in view of Elton et al. as applied to claims 1 and 13 above, and further in view of Rieber et al. (U.S. Pat. No. 4,607,183).

Huang et al., Nikitin et al. and Elton et al. disclose a stator as described on item 1 above. However, neither Huang et al., Nikitin et al. nor Elton et al. disclose that each stator tooth has at least one longitudinal axial notch along its innermost side facing the

rotor, and a key element of a non magnetic material is positioned in said notch to prevent lateral oscillations of said tooth; nor a lining located in the notch formed of rubber.

Rieber et al. disclose that each stator tooth has at least one longitudinal axial notch (30) along its innermost side facing the rotor, and a key element (36) of a non magnetic material is positioned in said notch to prevent lateral oscillations of said tooth; and a lining (48) located in the notch formed of rubber (column 1, lines 65 to 68) for the purpose of providing a measure of resilience and lubricity to the surface thereby reducing the removal of the insulation during wedge drive operation and eliminate long term abrasive wear of laminations of the dynamo-electric machine.

It would have been obvious at the time the invention was made to modify the stator of Huang et al., Nikitin et al. and Elton et al. and provide it with stator teeth having at least one longitudinal axial notch along its innermost side facing the rotor, and a key element of a non-magnetic material being positioned in said notch to prevent lateral oscillations of said tooth; and a lining located in the notch formed of rubber as disclosed by Rieber et al. for the purpose of providing a measure of resilience and lubricity to the surface thereby reducing the removal of the insulation during wedge drive operation and eliminate long term abrasive wear of laminations of the dynamo-electric machine.

7. Claims 27 to 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. in view of Nikitin et al. and further in view of Elton et al. as applied to claim 17, and further in view of B. C. Evans (U.S. Pat. No. 2,424,443).

Huang et al., Nikitin et al. and Elton et al. disclose a stator as described on item 2 above and also friction means located at the contact surface between the tooth yoke and the stator frame (column 8, lines 27 to 34). However, neither Huang et al., Nikitin et al. nor Elton et al. disclose that the compressing means includes a structure of pre-stressing means, arranged along the circumference of the core, including brackets arranged axially for distributing the compressive force to the core; nor that the compressing means includes rods or wires.

B. C. Evans discloses that the compressing means includes a structure of pre-stressing means (figure 3), arranged along the circumference of the core, including brackets (8) arranged axially for distributing the compressive force to the core; and that the compressing means includes rods or wires (4) for the purpose of retaining the core in assembled relationship.

It would have been obvious at the time the invention was made to modify the stator of Huang et al., Nikitin et al. and Elton et al. and provide it with compressing means including a structure of pre-stressing means, arranged along the circumference of the core, including brackets arranged axially for distributing the compressive force to the core; in which the compressing means includes rods or wires as disclosed by B. C. Evans for the purpose of maintaining structure integrity of the stator core during operation.

8. Claims 23 to 24 and 30 to 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. in view of Nikitin et al. further in view of Elton

et al. and further in view of B. C. Evans as applied to claims 17, 20 and 27, and further in view of O. Lasche (U.S. Pat. No. 681,800).

Huang et al., Nikitin et al., Elton et al. and B. C. Evans disclose a stator as described on item 7 above. However, neither Huang et al., Nikitin et al., Elton et al. nor B. C. Evans disclose that the stator frame is divided into at least two frame sections, such that a longitudinal axial opening is formed between the frame sections, and further including means for connecting the frame sections and for tightening said frame around the stator core for reducing said openings; nor that said means for tightening the stator frame includes a bolted joint operating against the resilient material of the linings; nor that the compressing means includes at least one clamping ring applied circumferentially around the stator core; nor a base upon which the core is supported.

O. Lasche discloses that the stator frame is divided into at least two frame sections (figure 4), such that a longitudinal axial opening is formed between the frame sections, and further including means for connecting the frame sections and for tightening said frame around the stator core for reducing said openings; and that said means for tightening the stator frame includes a bolted joint (n); and that the compressing means includes at least one clamping ring (alpha) applied circumferentially around the stator core; and a base upon which the core is supported for the purpose of obviating the inward and outward bending of the rings or segments.

It would have been obvious at the time the invention was made to modify the stator of Huang et al., Nikitin et al., Elton et al. and B. C. Evans and provide it with a stator frame divided into at least two frame sections, such that a longitudinal axial

opening is formed between the frame sections, and further including means for connecting the frame sections and for tightening said frame around the stator core for reducing said openings; and said means for tightening the stator frame including a bolted joint operating against the resilient material of the linings; and compressing means including at least one clamping ring applied circumferentially around the stator core; and a base upon which the core is supported as disclosed by O. Lasche, for the purpose of improving structural rigidity on the stator core.

9. Claims 25 to 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al. in view of Nikitin et al. further in view of Elton et al. and further in view of B. C. Evans and further in view of O. Lasche as applied to claim 24 and further in view of Beck et al. (U.S. Pat. No. 4,255,849).

Huang et al., Nikitin et al., Elton et al., B. C. Evans and O. Lasche disclose a stator a described on item 7 above. However, neither Huang et al., Nikitin et al., Elton et al., B. C. Evans nor O. Lasche disclose that the stator frame further includes a spring means associated with said tightening means, such that the openings in the stator frame and the winding slots are automatically adjusted to thermal expansions and contractions of the winding; nor that the spring means includes a cup spring.

Beck et al. disclose that the stator frame further includes a spring means associated with said tightening means, such that the openings in the stator frame and the winding slots are automatically adjusted to thermal expansions and contractions of the winding; and that the spring means includes a cup spring (column 2, lines 9 to 24)

for the purpose of preventing movements of the stator windings due to large current densities which exert large forces on the windings.

It would have been obvious at the time the invention was made to modify the stator of Huang et al., Nikitin et al., Elton et al., B. C. Evans and O. Lasche and provide it with a stator frame including a spring means associated with said tightening means, such that the openings in the stator frame and the winding slots are automatically adjusted to thermal expansions and contractions of the winding; and the spring means includes a cup spring as disclosed by Beck et al., for the purpose of preventing movements of the stator windings due to large current densities which exert large forces on the windings.

10. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. in view of Elton et al.

Takeuchi et al. disclose a method for manufacturing a stator as described on item 2 above. However, Takeuchi et al. do not disclose the provision of a winding comprising a high voltage field confining cable.

Elton et al. disclose the provision of a winding comprising a high voltage field confining cable (figure 1) for the purpose of avoiding the development of a corona discharge when an electrical potential exists between the conductor and the region adjacent the exterior surface of the insulator.

It would have been obvious at the time the invention was made to modify the method of Takeuchi et al. and provide it with of a winding comprising a high voltage field confining cable as disclosed by Elton et al. for the purpose of avoiding the development

of the corona discharge between the conductor and the region adjacent to the exterior surface of the insulator.

11. Claims 38 to 39, 42 to 43, 47 to 51 and 54 to 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. in view of Huang et al.

Takeuchi et al. disclose a method for manufacturing a stator as described on item 2 above. However, Takeuchi et al. do not disclose a step of gluing a yoke portion of each stator tooth plank to a corresponding yoke portion of a previously fitted stator tooth plank at a corresponding yoke position after a section of a complete stator core has been manufactured; nor a step of providing a lining of resilient material to the yoke portion of at least one of two opposite lateral sides of a stator tooth facing the corresponding side of an adjacent stator; nor providing a lining of a resilient material to the external side of the yoke portion of the stator tooth; nor providing a lining of a resilient material to the inwardly facing surface of the stator frame, which enters into contact with the external sides of the yoke portions of the stator teeth; nor a step of assembling the stator core sections into a complete stator core within a stator frame; nor surrounding the stator core with resilient material, and tightening the stator frame for compressing the resilient material so that the winding is pressed against the walls of the slots; nor providing a friction means at the contact surface between the external side of the yoke portions of the teeth and the stator yoke portion arranged circumferentially along said external side of the yoke portions; nor a step of inserting the winding in the axial direction of the stator core.

Huang et al. disclose a step of gluing a yoke portion of each stator tooth plank to a corresponding yoke portion of a previously fitted stator tooth plank at a corresponding yoke position after a section of a complete stator core has been manufactured; and

a step of providing a lining of resilient material to the yoke portion of at least one of two opposite lateral sides of a stator tooth facing the corresponding side of an adjacent stator; and

a step of providing a lining of a resilient material to the external side of the yoke portion of the stator tooth; and

a step of providing a lining of a resilient material to the inwardly facing surface of the stator frame, which enters into contact with the external sides of the yoke portions of the stator teeth; and

a step of assembling the stator core sections into a complete stator core within a stator frame; and

surrounding the stator core with resilient material, and

tightening the stator frame for compressing the resilient material so that the winding is pressed against the walls of the slots; and

providing a friction means at the contact surface between the external side of the yoke portions of the teeth and the stator yoke portion arranged circumferentially along said external side of the yoke portions; and

a step of inserting the winding in the axial direction of the stator core; and

a step of manufacturing the stator on the site of installation of the rotating electric machine (column 8, lines 19 to 36), for the purpose of providing an improved design of a

stator core formed of multiple segments formed of pressed double-coated iron powder which have a plurality of radially oriented teeth.

It would have been obvious at the time the invention was made to modify the method of manufacture a stator of Takeuchi et al. and provide it with a step of gluing a yoke portion of each stator tooth plank to a corresponding yoke portion of a previously fitted stator tooth plank at a corresponding yoke position after a section of a complete stator core has been manufactured; and a step of providing a lining of resilient material to the yoke portion of at least one of two opposite lateral sides of a stator tooth facing the corresponding side of an adjacent stator; a step of providing a lining of a resilient material to the external side of the yoke portion of the stator tooth; and a step of providing a lining of a resilient material to the inwardly facing surface of the stator frame, which enters into contact with the external sides of the yoke portions of the stator teeth; and a step of assembling the stator core sections into a complete stator core within a stator frame; and surrounding the stator core with resilient material, and tightening the stator frame for compressing the resilient material so that the winding is pressed against the walls of the slots; and providing a friction means at the contact surface between the external side of the yoke portions of the teeth and the stator yoke portion arranged circumferentially along said external side of the yoke portions; and a step of inserting the winding in the axial direction of the stator core; and a step of manufacturing the stator on the site of installation of the rotating electric machine as disclosed by Huang et al. for the purpose of providing an improved design of a stator core formed of multiple

segments formed of pressed double-coated iron powder which have a plurality of radially oriented teeth.

12. Claims 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. in view of Rieber et al.

Takeuchi et al. disclose a method for manufacturing a stator as described on item 2 above. However, Takeuchi et al. do not disclose a step of forming notches at a forward end of the stator tooth planks and inserting key elements of a non magnetic material between the tooth planks in the notches; nor a step of providing a lining of a resilient material inside the notch.

Rieber et al. disclose a step of forming notches at a forward end of the stator tooth planks and inserting key elements of a non magnetic material between the tooth planks in the notches; and

a step of providing a lining of a resilient material inside the notch (column 4, lines 51 to 53), for the purpose of providing a measure of resilience and lubricity to the surface thereby reducing the removal of the insulation during wedge drive operation and eliminate long term abrasive wear of laminations of the dynamo-electric machine.

It would have been obvious at the time the invention was made to modify the method for manufacturing a stator of Takeuchi et al. and provide it with a step of forming notches at a forward end of the stator tooth planks and inserting key elements of a non magnetic material between the tooth planks in the notches; and a step of providing a lining of a resilient material inside the notch as disclosed by Rieber et al., for the purpose of providing a measure of resilience and lubricity to the surface thereby

reducing the removal of the insulation during wedge drive operation and eliminate long term abrasive wear of laminations of the dynamo-electric machine.

13. Claims 46 and 52 to 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. in view of O. Lashe.

Takeuchi et al. disclose a method of manufacturing a stator as described on item 2 above. However, Takeuchi et al. do not disclose a step of applying compression means for tangentially compressing the teeth of the stator, thereby providing a pre-stressing at the innermost end of the teeth; nor fitting the core sections together under compression by comprising pre-stressing the core about the circumference and distributing the compressive force to the core; nor fitting the core sections together under compression by means of applying at least one clamping ring circumferentially around the core.

O. Lashe discloses a step of applying compression means for tangentially compressing the teeth of the stator, thereby providing a pre-stressing at the innermost end of the teeth; and

fitting the core sections together under compression by comprising pre-stressing the core about the circumference and distributing the compressive force to the core; and

fitting the core sections together under compression by means of applying at least one clamping ring circumferentially around the core (lines 75 to 80), for the purpose of obviating the inward and outward bending of the rings or segments.

It would have been obvious at the time the invention was made to modify the method of manufacturing a stator of Takeuchi et al. and provide it with a step of

applying compression means for tangentially compressing the teeth of the stator, thereby providing a pre-stressing at the innermost end of the teeth; and fitting the core sections together under compression by comprising pre-stressing the core about the circumference and distributing the compressive force to the core; and fitting the core sections together under compression by means of applying at least one clamping ring circumferentially around the core as disclosed by O. Lashe, for the purpose of obviating the inward and outward bending of the rings or segments.

14. Claims 60 to 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. in view of Nikitin et al. and further in view of Elton et al. in view of G. F. Redfern.

Takeuchi et al. disclose a method for manufacturing a stator as described on item 1 above. However, Takeuchi et al. do not disclose a stator with windings comprising a high voltage cable including a circuit-carrying conductor; nor a cable including a circuit-carrying conductor and a magnetically permeable, electric field confining insulating covering surrounding the conductor; nor that the cable is threadably insertable into the aligned circular openings between each stator tooth plank before said planks are fit together; nor that the recesses comprise semicircular surfaces formed in the teeth, nor that the axial openings are in the form of circular holes for threadably receiving the cable therein; nor the step of forming the radially adjacent recesses comprising forming semicircular recesses and fitting the two planks together forms radially adjacent circular openings for threadably receiving the cable therein.

Nikitin et al. disclose a high voltage stator with windings comprising a high voltage cable including a circuit-carrying conductor, for the purpose of raising the voltage across the stator winding.

Elton et al. disclose a cable including a circuit-carrying conductor and a magnetically permeable, electric field confining insulating covering surrounding the conductor, for the purpose of avoiding the development of a corona discharge when an electrical potential exists between the conductor and the region adjacent the exterior surface of the insulator.

G. F. Redfern disclose that the cable is threadably insertable into the aligned circular openings between each stator tooth plank before said planks are fit together; and that

the recesses comprise semicircular surfaces formed in the teeth, and

the axial openings are in the form of circular holes for threadably receiving the cable therein; and that

and the step of forming the radially adjacent recesses comprising forming semicircular recesses and fitting the two planks together forms radially adjacent circular openings for threadably receiving the cable therein, for the purpose of giving the machine a suitable leakage value.

It would have been obvious at the time the invention was made to modify the method for manufacturing a stator of Takeuchi et al. and provide it with a high voltage stator with windings comprising a high voltage cable including a circuit-carrying conductor as disclosed by Nikitin et al., and a cable including a circuit-carrying

conductor and a magnetically permeable, electric field confining insulating covering surrounding the conductor as disclosed by Elton et al.; and that the cable is threadably insertable into the aligned circular openings between each stator tooth plank before said planks are fit together; and that the recesses comprise semicircular surfaces formed in the teeth, and the axial openings are in the form of circular holes for threadably receiving the cable therein; and that and the step of forming the radially adjacent recesses comprising forming semicircular recesses and fitting the two planks together forms radially adjacent circular openings for threadably receiving the cable therein as disclosed by G. F. Redfern, for the purpose of raising the voltage across the stator winding, avoiding the development of a corona discharge when an electrical potential exists between the conductor and the region adjacent the exterior surface of the insulator and giving the machine a suitable leakage value.

Response to Arguments

Applicant's arguments with respect to claims 1 to 20, 22 to 56 and 58 to 62 have been considered but are moot in view of the new ground(s) of rejection.

Rieber et al. disclose as one of its purposes to control the widening and narrowing of the stator slots during operation of the motor (column 1 lines 60 to 68 and column 2, lines 1 to 15).

B. C. Evans discloses that the frame can be used to apply circumferential pressure on the stator (column 2, lines 26 to 49).

O. Lashe discloses using the yoke to correct deformations on stationary armatures and inductor rings of electrical machines. Figure 4a shows that the yoke is around the stator circumference to perform the latter function.

Beck disclose that a system like the one described can be used on magnetic suspension systems which allows contactless guidance of a vehicle along a stationary track according to the electrodynamic repulsion principle. This type of systems use a stator with windings and a movable portion.

Takeuchi et al. do not disclose a high voltage cable on claim 34. The high voltage cable limitation has been addressed on the other claims rejections.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez
July 2, 2000

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